

Claims

1. A fiber-reinforced ceramic material whose reinforcing fibers are present in the form of at least one of woven fabrics, short fibers and long fibers, wherein the mass ratio of the fibers in the form of woven fabrics, short fibers and long fibers is 0-35:25-80:0-45 and at least a part of the reinforcing fibers has at least one protective layer of carbon produced by pyrolysis of resins or pitches, boron compounds or phosphorus compounds or combinations thereof which have been deposited on the fibers.
2. The fiber-reinforced ceramic material as claimed in claim 1, wherein at least 50 % of the mass of the fibers are carbon fibers.
3. The fiber-reinforced ceramic material as claimed in claim 1, wherein the matrix comprises carbon.
4. The fiber-reinforced ceramic material as claimed in claim 1, wherein the matrix comprises silicon carbide.
5. The fiber-reinforced ceramic material as claimed in claim 4, wherein the matrix comprises from 20 to 99.8 % by mass of SiC, from 0.1 to 40 % by mass of silicon and from 0.1 to 70 % by mass of carbon.
6. The fiber-reinforced ceramic material as claimed in claim 2, wherein the carbon fibers have at least one protective layer of carbon produced by pyrolysis of resins or pitches which have been deposited on the said fibers.
7. The fiber-reinforced ceramic material as claimed in claim 1, wherein additives selected from the group

consisting of SiO_2 , silicon carbide powder, lamellar boron nitride, manganese sulfide and metal silicides are present in the matrix.

- 5 8. The fiber-reinforced ceramic material as claimed in claim 1, wherein the matrix comprises a glass based on phosphates, silicates, aluminates and/or borates of alkali metals, alkaline earth metals or earth metals.
- 10 9. The fiber-reinforced ceramic material as claimed in claim 1, wherein the matrix comprises metals selected from the group consisting of copper, silver, aluminum, titanium and the elements of the iron group.
- 15 10. A process for producing fiber-reinforced ceramic materials as claimed in claim 1, which comprises shaping woven fabrics of reinforcing fibers together with a molding composition comprising reinforcing fibers in the form of short and/or long fibers and carbonizable
20 materials selected from among thermoplastic polymers, resins and pitches to produced shaped bodies which are fired by heating to a temperature of from about 750 to about 1 100°C in the absence of oxygen to produce porous fiber-reinforced carbon bodies and, if desired,
25 subsequently infiltrating these with liquid silicon or a silicon-containing alloy at a temperature which is at least as high the melting point of silicon, resulting in at least of the carbon being converted into silicon carbide.
- 30 11. A method of use of a fiber-reinforced ceramic material as claimed in claim 1 as material for brake linings, comprising fixing plates made from the fiber-reinforced ceramic material of claim 1 to support plates.